



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,974	11/26/2003	Kelly Lynn Karau	137282	9043
7590 03/20/2008				
John S. Beulick Armstrong Teasdale LLP Suite 2600 One Metropolitan Square St. Louis, MO 63102			EXAMINER BITAR, NANCY	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 03/20/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/722,974

Applicant(s)

KARAU ET AL.

Examiner

NANCY BITAR

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-25 and 40-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-25 and 40-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB088)
- Paper No(s)/Mail Date 10/04/2004.
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim Rejections - 35 USC § 101

- 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim(s) 40-43 are rejected under 35USC 101 because the claims invention is directed to non-statutory subject matter as set forth in MPEP 21.06.IV.B.1 (a). The examiner suggests amending the claim to “computer readable medium encoded with a computer program” or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 22, 40, 44 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation “seamlessly toggling between a volume rendering of the low-resolution image data and the analysis results of the high-resolution data within a single display”. The closest part in the specification is paragraph [0048-0049] but does not teach the toggling between the volume rendering and the CAD analysis as recited by the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 22-25, and 40-47 rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh et al (US 6,687,329) in view of Uppaluri et al(7,295,691).

As to claim 22, Hsieh et al teaches a method for seamless a display and analysis of dual resolution image data, said method comprising:

reviewing image data at low resolution (initial data acquisition, 108, figure 5);

performing a volumetric analysis of at least one feature of interest in the low resolution data (preliminary target, 114, figure 5); substituting high-resolution image data of the at least one feature of interest for the analyzed low resolution image data without operator intervention (additional data acquisition, 122, figure 5, note that entirely different acquired data may be desired based upon the initial CAD evaluation, such as data acquired via an entirely different modality system, column 8, lines 1-5); and displaying a volume rendering (the modality may be coupled with particular settings, also typically dictated by the physics of the system, to provide higher or lower contrast images, volume rendering, sensitivity or insensitivity to specific tissues, column 8, lines 16-30) of the low resolution image data and displaying analysis results of the high-resolution image data in a single display (presentation to radiologists, 124, figure 5). Note that Hsieh et al clearly teaches that the imaging system may also be of different modalities were

a PET system is considered a low resolution whereas “the subsequent acquisition may include acquisition of data from other regions of the patient's body, at different orientations with respect to tissues of interest, at different resolution levels, and so forth. Moreover, entirely different acquired data may be desired based upon the initial CAD evaluation, such as data acquired via an entirely different modality system, column 7, lines 60-67). While Hsieh meets a number of the limitations of the claimed invention, as pointed out more fully above, Hsieh fails to specifically teach “seamlessly toggling between a volume rendering of the low-resolution image data and the analysis results of the high-resolution image data within a single display.”

Specifically, Upplauri et al. teaches the CAD algorithm has found a region of interest, such as a nodule, in a region that would normally be difficult for the radiologist to visualize on a monitor or on film, the computer can employ a different tone scale such that that region can be visualized. This modified tone-scale might be implemented as an optional feature in the user interface--such as a button that will allow either the standard tone scale, or one of the modifications detailed below. The button may allow the modified tone scale to be displayed when appropriate, or it could toggle between modified and original tone scale (column 21, lines 14-30). it would have been obvious to one of ordinary skill in the art to toggle between the a volume rendering of the low-resolution image data and the Cad analysis results in the Hsieh display in order to decrease the time from the radiologist to review and increase the number of exams he can complete and a better visualization. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 23, Hsieh et al. teaches a method in accordance with claim 22 further comprising selecting an area in the object represented by the high-resolution image data using a CAD algorithm (The first series of images is then processed in accordance with a CAD algorithm. A second series of images is then acquired based upon the results of the CAD algorithm, column 2, lines 50-56).

As to claim 24, Hsieh et al. teaches a method in accordance with claim 22 wherein the high resolution image data is present for only the features of interest identified by a CAD algorithm (The particular CAD algorithm is commonly selected based upon the type of feature to be identified, and upon the imaging modality used to create the image data. The CAD technique may employ segmentation algorithms, which identify the features of interest by reference to known or anticipated image characteristics, such as edges, identifiable structures, boundaries, changes or transitions in colors or intensities, changes or transitions in spectrographic information, and so forth. Current CAD algorithms generally offer the potential for identifying these features only. Subsequent processing and data acquisition is, then, entirely at the discretion and based upon the expertise of the practitioner, column 6, lines 2-14).

As to claim 25, as best understood, Hsieh teaches a method in accordance with claim 22 further comprising obtaining high-resolution image data representative of an area in an object for which high-resolution image data is absent (column 6, lines 41-57).

Claims 40-43 differ from claims 22-25 only in that claims 22-25 are a method claim whereas, claims 40-43 are computer claim. Thus, claims 41-43 are analyzed as previously discussed with respect to claims 22-25 above.

Claims 44-47 differ from claims 22-25 only in that claims 22-25 are a method claim whereas, claims 44-47 are an apparatus claim. Thus, claims 44-47 are analyzed as previously discussed with respect to claims 22-25 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W. Johns/
Primary Examiner, Art Unit 2624

Nancy Bitar

3/14/2008